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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,106	11/17/2003	Harue Nakashima	0553-0382	3243

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CUMMINGS & MEHLER, LTD.
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200 WEST ADAMS STREET
CHICAGO, IL 60606

EXAMINER

GARRETT, DAWN L

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/715,106

Applicant(s)

NAKASHIMA ET AL.

Examiner

Dawn Garrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-6 and 10-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4,5 and 10-39 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 6, 2006 has been entered.

2. New claims 36-39 have been added. Claims 4-6 and 10-39 are pending.

3. The rejection of claims 4, 5, and 11-34 under 35 USC 103(a) as being unpatentable over Suzuki et al. (JP 2001-043976 A) in view of Mueller et al. (US 6,316,786) is withdrawn.

4. The rejection of claims 6, 10, and 35 under 35 USC 112, first paragraph, is withdrawn.

Claim Objections

5. Claim 6 is objected to because of the following informalities: In claim 6, the word "complex" should be inserted after "metal" in the phrase just prior to the Formula 2 compound. In addition, a period should be added to the end of claim 6 since it appears the period has been deleted. Appropriate correction is required.

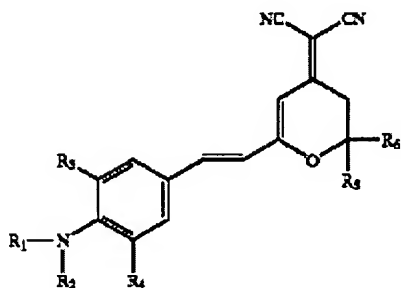
Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 4, 5, and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 6,680,132). Shi et al. discloses red organic electroluminescent devices comprising at least one organic luminescent medium including a formula:

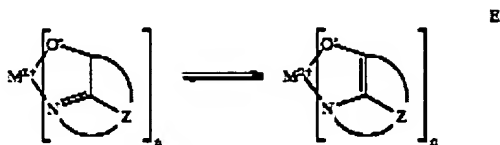


wherein:

R1 and R2 are individually alkyl of from 1 to 20 carbon atoms, aryl, substituted aryl, carbocyclic and other heterocyclic systems; and R1 and R2 can be connected to form 5 or 6 member ring systems; and R3 and R4 are individually hydrogen; alkyl of from 1 to 10 carbon atoms, and a branched or unbranched 5 or 6 member substituent ring connecting with R1, R2 respectively; and R5 and R6 are individually hydrogen; alkyl of from 1 to 20 carbon atoms; aryl and heteroaryl of from 5 to 24 carbon atoms; and R6 can be connected with R5 to form a branched or unbranched 5 or 6 member carbocyclic ring.

(see abstract). These compounds are used as dopants (see entire document) and read upon a red-emitting dopant. As a useful host of the luminescent layer Shi et al. teaches metal complexes such as chelated oxinoid compounds (see col. 8, lines 46-67) including the following formula (see col. 8, lines 5-27):

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wherein

M represents a metal;

n is an integer of from 1 to 4; and

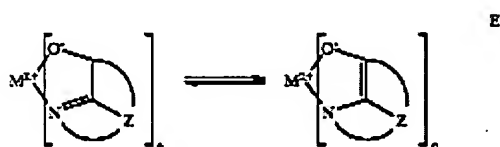
Z independently in each occurrence represents the atoms completing a nucleus having at least two fused aromatic rings.

Since M represents a metal, this teaching encompasses Ti, Zr, Hf and Rf of Group IV and more specifically, Shi et al. clearly mentions “Zirconium oxine” at col. 8, lines 66-67. The ligand required by the instant claims is clearly taught by Shi et al. (see all of col. 8). Although Shi et al. fails to *exemplify* a device using a combination of Group IV complex host material with the red luminescent dopants of the formula shown in the abstract, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a device comprising a luminescent layer of the Ti, Zr, Hf and Rf complexes in combination with the red emitting dopants, because Shi et al. clearly teaches the complexes as suitable hosts and the red emitting compounds as suitable red dopants for a luminescent layer of an electroluminescent device.

8. Claims 11-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 6,680,132) in view of Kim et al. (US 6,614,176). Shi et al. discloses red organic electroluminescent devices comprising at least one organic luminescent medium including red-emitting DCM-type derivatives (see abstract). These compounds are used as dopants (see entire document) and read upon a red-emitting dopant. Shi et al. fails to teach the specific red-emitting DCM derivatives of claims 11, 12, 19, 20, 27, and 28. Kim et al. teaches in analogous art useful dopants for a light emitting layer comprising DCJTB, DCM1 (Kim et al. sets forth this

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compound as “DCM”), and DCM2 (see col. 3 and 4). It would have been obvious to one of ordinary skill in the art to have selected the DCM derivatives taught by Kim et al. for the Shi et al. device, because Kim et al. teaches the DCM derivatives as suitable dopants for a light emitting device. One would have expected the DCM derivatives to be similarly useful in the Shi et al. device, especially since Shi et al. disclose DCM-type derivatives as suitable for their devices. As a useful host of the luminescent layer Shi et al. teaches metal complexes such as chelated oxinoid compounds (see col. 8, lines 46-67) including the following formula (see col. 8, lines 5-27):



wherein

M represents a metal;

n is an integer of from 1 to 4; and

Z independently in each occurrence represents the atoms completing a nucleus having at least two fused aromatic rings.

Since M represents a metal, this teaching encompasses Ti, Zr, Hf and Rf of Group IV and more specifically, Shi et al. clearly mentions “Zirconium oxine” at col. 8, lines 66-67. The ligand required by the instant claims is clearly taught by Shi et al. (see all of col. 8). Although Shi et al. fails to *exemplify* a device using a combination of Group IV complex host material with the red luminescent dopants, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a device comprising a luminescent layer of the Ti, Zr, Hf and Rf complexes in combination with the red emitting dopants, because Shi et al. clearly teaches the

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complexes as suitable hosts and the red emitting compounds as suitable red dopants for a luminescent layer of an electroluminescent device.

Allowable Subject Matter

9. Claim 6 contains allowable subject matter, but has some minor informalities as discussed above. The closest prior art is considered to be Shi et al. discussed in this Office action. The prior art either alone or in combination with other art fails to teach or to render obvious the metal complex of claim 6 in both a green layer and a red layer of an electroluminescent device that further contains a blue light emitting layer.

Response to Arguments

10. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached at (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Dawn Garrett
Primary Examiner
Art Unit 1774

March 30, 2006